REMARKS

Examiner Huson is again thanked for careful consideration of the present patent application, and for the courtesy extended in granting a telephonic interview with the undersigned on December 13, 2005.

As an initial matter, the amendments to claims 1 and 32 are for clarity and do not introduce new matter. New claims 39 and 40 are supported, inter alia, by the original claims and by the specification as filed.

In the last Office Action, the sole remaining rejection was a § 103 rejection of the claims over two references, Eastman and Rose. Applicants respectfully submit that the Examiner has overlooked some of the principal teachings in the present patent application, and has also overlooked certain claim elements. For purposes of the following discussion, Applicants will not contest the assertion in the Office Action that Eastman discloses a soluble starch. It is noted that even the Rose patent makes passing references to a preference for water solubility (although it is not clear that Rose is distinguishing solubility from dispersibility). More fundamentally, however, the present invention divides a process that provides certain advantages over both the cited references. The claimed invention permits operation under conditions that are different from, and improved over, those of the cited references. The conditions expressed herein have been found suitable to provide for commercial-skill manufacture of a cold-water soluble starch without the drawbacks inherent in the prior art processes.

More specifically, in the preferred embodiments of the process of the invention, a granular starch having conventional particle size distribution may be employed. There is no need for a pre-compaction step. There is no need for alcoholic solvents. There is no need for high-pressure reactors. Even if the Eastman and Rose patents were read to disclose a similar end product, the processing conditions taught therein are not so tolerant. In the Eastman patent, the starch is prepared using an alcoholic solvent (see column 3, line 50, et seq.). Eastman likewise requires temperatures of 300 - 360°F "at or above autogenic pressure." For instance, in Example 2, the pressures in the system were from 400 to 600 psig, and the liquid component was largely ethanol. These conditions are far from ideal, given the dangers of alcoholic solvents, particularly at high pressures. Thus, although less preferred embodiments of the present invention permit the use of alcoholic solvents at high pressures, such are not required.

The processing conditions of Rose are somewhat different from those of Eastmar, but like those of Eastman are also somewhat cumbersome. Rose requires starch to be compacted into pellets or granules having a particle size outside the range of conventional starch granules (see column 2, lines 54-55, expressing a preferred particle size of 800 to 1200 microns; the average starch granule has a diameter of 30 microns). Rose thus teaches conditions that fall outside those specified in the pending claims. In addition, a nucleating agent is apparently required (see column 6, line 5). Such process requires an additional processing step (compaction) and an additional processing aid (talc) not required by the process of the invention.

Neither Eastman nor Rose teaches a process as specified in the claims of the present application. In accordance with the invention of claims 1 and 33, the starch, which is a starch having a conventional particle size distribution, is introduced into an extruder and processed in two stages, first, under conditions that are insufficient to gelatinize the starch to the desired gelatinization level, and second under conditions that are sufficient to gelatinize the starch. Without limiting the invention to a particular theory of operation, it is believed that the invention allows preparation of a soluble starch by causing, in the first stage, water to migrate into the starch granules and heating of the starch granules. The granules are not intended to be gelatinized to a significant extent in this stage, so the viscosity remains sufficiently low to permit extrusion in the second stage. In the second stage, the starch granules are gelatinized, ultimately to yield a soluble product.

In any case, the claims specify processing conditions that are not found in either of the cited references. The Examiner has not pointed to any teachings of a two-stage extrusion process in either cited reference, nor does Rose (the sole reference cited for extrusion) disclose extrusion of a starch with a conventional particle size distribution. Nor would the processing conditions of claims 1 or 33 be deemed obvious from either or both the cited references, alone or in combination. In retrospect, this is not surprising, because both references apply distinct, disparate approaches to arriving at their end products. Eastman teaches a conventional process involving high-pressure ethanol. Rose teaches a pre-granulation step, and accordingly teaches away from the invention. Nowhere is there a teaching of a two-stage extrusion as specified in claims 1 or 33. The references in fact appear to teach completely different processing steps, and one skilled in the art would find no guidance from either reference as to the processing steps

claimed herein. Nor are the advantages that may be attained from the invention apparent from either of the cited references.

New claim 39 is likewise patentable over the art. Again, neither Eastman nor Rose discloses a process whereby a starch having a conventional particle size distribution is extruded to yield a granular starch. Rose teaches away from the invention of claim 39, and Eastman is apparently silent as to extrusion.

Accordingly, the § 103 rejection cannot be maintained against the previously pending claims, and the rejection should not be applied to the new claims. A notice of allowance is respectfully solicited.

Respectfully submitted,

Dated: December 13, 2005

By: _____

Allen E. Hoover
Registration No. 37,354
BANNER & WITCOFF, LTD.
10 South Wacker Drive
Suite 3000
Chicago, Illinois 60606
Telephone: 312-463-5000
Facsimile: 312-463-5001